CERTIFICATION UNDER 37 CFR 1.10

I hereby certify that this Transmittal Letter and the papers indicated as being transmitted therewith are being deposited with the United States Postal Service on this date shown below in an envelope as "Express Mail Post Office to Addressee" under the below indicated Mailing Label Number, addressed to: Box PCT, Commissioner for Patents, U.S. Patent and Trademark Office, Washington, D.C. 20231.

Mailing Label No.: EF232848310US

Deposit Date: January 17, 2002

Shari Saus

Name: Shari Saus

ATTORNEY'S DOCKET NO. PATNP0101US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(DO/EO/US)

In re national phase of:

Applicant(s):	Dirnberger Gerhard
International Application No.:	PCT/AT00/00145
International Filing Date:	May 24, 2000
Priority Date Claimed:	July 23, 1999
Title of Invention:	COMPONENT OR ASSEMBLY OF SAME AND FIXING CLIP THEREFOR

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING ENTRY INTO U.S. NATIONAL PHASE UNDER 35 U.S.C. 371

Box PCT
Commissioner for Patents
U.S. Patent and Trademark Office
Washington, D.C. 20231

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information under 35 U.S.C. 371:

1. This express request to immediately begin national examination procedures (35 U.S.C. 371(f)).

2. The U.S. National Fee (35 U.S.C. 371(c)(1)) and other fees (37 CFR 1.492) as indicated below.

3. A copy of the International application (35 U.S.C. 371(c)(2)):

   a. [X] is transmitted herewith (International Publication No. WO 01/07729).

   b. [ ] is not required, as the application was filed with the United States Receiving Office.

   c. [ ] has been transmitted by the International Bureau. A copy of Form PCT/1B/308 is enclosed.

4. [ ] An accurate translation of the International application into the English language (35 U.S.C. 371(c)(2)) is transmitted herewith.

5. Amendments to the claims of the International application under PCT Article 19 (35 U.S.C. 371(c)(3)):

   a. [ ] are transmitted herewith.

   b. [ ] have been transmitted by the International Bureau.

6. [ ] An accurate translation of the amendments to the claims under PCT Article 19 (38 U.S.C. 371(c)(3)) is transmitted herewith.

7. A copy of the international preliminary examination report (PCT/IPEA/409)

   a. [ ] is transmitted herewith.

   b. [ ] is not required as the United States Patent and Trademark Office was the IPEA.

8. Annex(es) to the international preliminary examination report

   a. [ ] is/are transmitted herewith.

   b. [ ] is not required as the United States Patent and Trademark Office was the IPEA.

9. [ ] An accurate translation of the annexes to the international preliminary examination report is transmitted herewith.

10. [ ] An oath or declaration of the inventor (35 U.S.C. 371(c)(4)) complying with 35 U.S.C. 115 is submitted herewith.

11. An International Search Report (PCT/ISA/210)

    a. [X] is transmitted herewith.

    b. [ ] has been transmitted by the International Bureau.

    c. [ ] is not required, as the application was searched by the United States International Searching Authority.

12. [ ] An Information Disclosure Statement under 37 CFR 1.97 and 1.98 is transmitted herewith, along with Form PTO-1449 and copies of citations listed.

13. [ ] An assignment document is transmitted herewith for recording, along with a separate cover sheet.

14. [ ] A preliminary amendment is enclosed.

15. [ ] A verified statement claiming small entity status is enclosed.

16. [ ] Other:

Basic National Fee					Fee
IPEA - US				$710.00	
ISA - US				$740.00	
PTO not ISA or IPEA				$1,040.00	
Claims meet PCT Art. 33(1)-(4) - IPEA - US				$100.00	
Filing with EPO or JPO search report				$890.00	
			Enter appropriate basic fee ➜		$890.00
Claims*	Number filed		Number extra	Rate	
Total claims	23	-20	3	$18.00	$54.00
Independent claims	1	-3	0	$84.00	$0.00
Multiple dependent claims (if applicable)				$280.00	
			Total of above		$944.00
Small entity statement enclosed, 1 if Yes, 0 if No ➜					$0.00
			Total national fee		$944.00
Fee for recording enclosed assignment				$40.00	
			Total fees enclosed		$944.00

*After any attached preliminary amendment reducing the number of claims and/or deleting multiple dependencies.

[X] A check in the amount of $ 944.00 to cover the above fees is enclosed.

[ ] Please charge our Deposit Account No. 18-0988 in the amount of $_____. A duplicate copy of this sheet is enclosed.

WARNING: TO AVOID ABANDONMENT OF THE APPLICATION THE BASIC NATIONAL FEE MUST BE PAID WITHIN THE 20/30 MONTH TIME LIMIT.

16. The Commissioner is hereby authorized to charge the following additional fees that may be required by this paper and during the entire pendency of this application to our Deposit Account No. 18-0988:

a. [X] 37 CFR 1.492(a)(1), (2), (3), (4) and (5) (basic national fee)

WARNING: BECAUSE FAILURE TO PAY THE NATIONAL FEE WITHIN 30 MONTHS WITHOUT EXTENSION (37 CFR S 1.495(B)(2)) RESULTS IN ABANDONMENT OF THE APPLICATION, IT WOULD BE BEST TO ALWAYS CHECK THE ABOVE BOX.

b. [ ] 37 CFR 1.492(b), (c) and (d) (presentation of extra claims)

NOTE: Because additional fees for excess or multiple dependent claims not paid on filing or on later presentation must only be paid or these claims cancelled by amendment prior to the expiration of the time period set for response by the PTO in any notice of fee deficiency (37 CFR 1.492(d)), it might be best not to authorize the PTO to charge additional claim fees, except possibly when dealing with amendments after final action.

Respectfully submitted,

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re National Phase of:

Applicant:	Dirnberger Gerhard
Inter. Appln. No.:	PCT/AT00/00145
Inter. Filing Date:	May 24, 2000
Title:	COMPONENT OR ASSEMBLY OF SAME AND FIXING CLIP THEREFOR

Attorney Docket No. PATNP0101US

PRELIMINARY AMENDMENT DELETING MULTIPLE DEPENDENCIES

Commissioner for Patents
United States Patent and Trademark Office
Washington, DC 20231

Sir:

Please amend the application in accordance with the following appended parts:

A. Clean Version of Replacement Paragraph/Section/Claim with Instructions for Entry; and

B. Version with Markings to Show Changes Made.

Remarks

By way of the foregoing, all of the claims have been amended to delete multiple dependencies. In the event there still remains a claim that depends from more than one claim, the Office is hereby authorized to amend such claim to depend from the first mentioned of the multiple claims from which it depends.

Respectfully submitted,

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A. Clean Version of Replacement Paragraph/Section/Claim with Instructions for Entry

Please amend the application as follows:

In the Claims:

Please replace claims 3-20 and 22-23 with the following amended versions thereof:

3. Components or arrangement according to Claim 1, characterized in that the two recesses (8, 9) running parallel to the longitudinal edges (7) are mirror-symmetrical in relation to the longitudinal centre plane of the corresponding component (1, 2).

4. Components or arrangement according to Claim 1, characterized in that the clip base (17) carries between the upward extending flange element (10) and the detent (12) another flange element (19) extending upward, which can be applied against the edge (7) of the component (1) accommodating the upward extending flange element (10), wherein if need be, the two flange elements (10, 19) are inclined toward each other and with surface (14) enclose the same angle between 60° and 80°, wherein the edge area (22) of edge (7), against which the flange element (19) can be applied, is inclined toward the surface (14) of the component (1, 2) at the same angle as the flange element (19).

5. Components or arrangement according to Claim 1, characterized in that the detent (12), the flange element (10) and the additional flange element (19) are punched out of the clip base (17) which is made of spring-elastic metal.

6. Components or arrangement according to Claim 1, characterized in that the edge-proximate inside surfaces (13, 20) of the two longitudinal recesses (8, 9) and one of the two transverse recesses (9') against which the flange element (10) or the detent (12) can be applied, particularly with a deflected or bent locking element (18), enclose an angle (α) smaller than 90°, preferably an angle between 50° and 80°, with the surface (14) of the component (1, 2), and that the edge-proximate inside surface (21) of the other transverse recess (8') against which the detent (12) can be applied, encloses

an angle (α') larger than 90°, preferably an angle between 110° and 130°, with the surface (14) of the component (1, 2).

7. Components or arrangement according to Claim 1, characterized in that when the detent (12) is tilted into the plane of the clip base body (17), the locking element (18) of the detent (12), with the surface (14) of the component (1, 2), encloses an angle which corresponds to the angle enclosed by the edge-proximate inside surface (13, 20) with the surface (14) of the component (1, 2).

8. Components or arrangement according to Claim 1, characterized in that the edge-proximate edge area (23) of the recess (9) accommodating the detent (12) is bevelled, reduced in size or rounded.

9. Components or arrangement according to Claim 1, characterized in that the edge-proximate inside surface (21) of one of the transverse recesses (8') can be applied against the detent (12) or its locking element (18), and that the locking element (18) of this detent (12) is inclined in the direction opposite to that of the surface (14) of the components (1, 2), that they each enclose different angles, whereby the outside end edge (25) of the inside surface (24) of recess (8') is closer to the transverse edge (7') of the corresponding component (1, 2) than the inside end edge (26).

10. Components or arrangement according to Claim 1, characterized in that the edge-proximate inside surface (29) of the recesses (8, 8', 9, 9') is rounded or runs at an angle (γ) of incline between 15° and 40°, preferably between 20° and 35°, in relation to the surface (14).

11. Components or arrangement according to Claim 1, characterized in that the edges (7) of the components (1, 2), which may have a plane underside (15) for lying on a plane underlay, adjoin each other at surface level but have a space between each other at bottom level (33).

12. Components or arrangement according to Claim 1, characterized in that the centre plane of the clip (11) is vertically symmetrical in relation to the longitudinal direction of the components (1, 2).

13. Components or arrangement according to Claim 1, characterized in that in a clip base body (17), a multiple of flange elements (10, 19) and/or detents (12) are provided, lying side by side in a row.

14. Components or arrangement according to Claim 1, characterized in that the detent (12) is concavely bent downward.

15. Components or arrangement according to Claim 1, characterized in that at least one recess (28) is formed in the transitional or connection area (38) between the detent (12) and the clip base body (17).

16. Components or arrangement according to Claim 1, characterized in that from at least one of the edges (7) of a component (1, 2), two legs extend, forming a groove (5) between them, and that into this groove (5) a tongue (6) coming from one of the edges of the other component (2) can be inserted, whereby, if need be, the leg (4) at underside level is shorter than the leg (3) at top surface level.

17. Components or arrangement according to Claim 1, characterized in that the detent (12) extends diagonally upward from the clip base body (17) at an angle (β) of 10° to 30°, preferably 15° to 25°.

18. Components or arrangement according to Claim 1, characterized in that the detent (12) curves and ends in the locking element (18).

19. Components or arrangement according to Claim 1, characterized in that the two recesses (8', 9'), which run parallel to the transverse edges (7') of a component (1, 2), have an incline that is comparable to that of their edge-proximate inside surfaces (13, 21).

20. Clip for components or an arrangement according to Claim 1, characterized in that the clip (11) is provided with at least two upward projecting retaining elements (10, 12), one of which is a flange element (10) bent upward from the clip base body (17), characterized in that the other retaining element (12) is formed by an elastically or resiliently displaceable detent (12) extending upward, whereby the detent (12), which may hold in its free end section an upward extending locking element (18), may in unstressed position extend from the clip base body (17) diagonally upward in the direction of the retaining element (10), and whereby between the upward-extending flange element (10) and the detent (12), the clip base body (17) holds an additional flange element (19) that is also extending upward.

22. Clip according to Claim 20, characterized in that in the lateral end sections of the flange element (10) and/or the additional flange element (19), bent engagement elements, in particular hooked or pointed deflections (41) are formed.

23. Clip according to Claim 20, characterized in that it is has one or more of the characteristics of Claims 2, 4, 5, 7, 12 to 15, 17 or 18.

B. Version with Markings to Show Changes Made

Please amend the application as follows:

In the Claims:

3. Components or arrangement according to Claim 1 ~~[or 2]~~, characterized in that the two recesses (8, 9) running parallel to the longitudinal edges (7) are mirror-symmetrical in relation to the longitudinal centre plane of the corresponding component (1, 2).

4. Components or arrangement according to Claim 1 ~~[one of Claims 1 to 3]~~, characterized in that the clip base (17) carries between the upward extending flange element (10) and the detent (12) another flange element (19) extending upward, which can be applied against the edge (7) of the component (1) accommodating the upward extending flange element (10), wherein if need be, the two flange elements (10, 19) are inclined toward each other and with surface (14) enclose the same angle between 60° and 80°, wherein the edge area (22) of edge (7), against which the flange element (19) can be applied, is inclined toward the surface (14) of the component (1, 2) at the same angle as the flange element (19).

5. Components or arrangement according to Claim 1 ~~[one of Claims 1 to 4]~~, characterized in that the detent (12), the flange element (10) and the additional flange element (19) are punched out of the clip base (17) which is made of spring-elastic metal.

6. Components or arrangement according to Claim 1 ~~[one of Claims 1 to 5]~~, characterized in that the edge-proximate inside surfaces (13, 20) of the two longitudinal recesses (8, 9) and one of the two transverse recesses (9') against which the flange element (10) or the detent (12) can be applied, particularly with a deflected or bent locking element (18), enclose an angle (α) smaller than 90°, preferably an angle between 50° and 80°, with the surface (14) of the component (1, 2), and that the edge-proximate inside surface (21) of the other transverse recess (8') against which the detent (12) can be applied, encloses an angle (α') larger than 90°, preferably an angle between 110° and 130°, with the surface (14) of the component (1, 2).

7. Components or arrangement according to Claim 1 ~~[one of Claims 1 to 6]~~, characterized in that when the detent (12) is tilted into the plane of the clip base body (17), the locking element (18) of the detent (12), with the surface (14) of the component (1, 2), encloses an angle which corresponds to the angle enclosed by the edge-proximate inside surface (13, 20) with the surface (14) of the component (1, 2).

8. Components or arrangement according to Claim 1 ~~[one of Claims 1 to 7]~~, characterized in that the edge-proximate edge area (23) of the recess (9) accommodating the detent (12) is bevelled, reduced in size or rounded.

9. Components or arrangement according to Claim 1 ~~[one of Claims 1 to 8]~~, characterized in that the edge-proximate inside surface (21) of one of the transverse recesses (8') can be applied against the detent (12) or its locking element (18), and that

the locking element (18) of this detent (12) is inclined in the direction opposite to that of the surface (14) of the components (1, 2), that they each enclose different angles, whereby the outside end edge (25) of the inside surface (24) of recess (8') is closer to the transverse edge (7') of the corresponding component (1, 2) than the inside end edge (26).

10. Components or arrangement according to Claim 1 ~~[one of Claims 1 to 9]~~, characterized in that the edge-proximate inside surface (29) of the recesses (8, 8', 9, 9') is rounded or runs at an angle (γ) of incline between 15° and 40°, preferably between 20° and 35°, in relation to the surface (14).

11. Components or arrangement according to Claim 1 ~~[one of Claims 1 to 10]~~, characterized in that the edges (7) of the components (1, 2), which may have a plane underside (15) for lying on a plane underlay, adjoin each other at surface level but have a space between each other at bottom level (33).

12. Components or arrangement according to Claim 1 ~~[one of Claims 1 to 11]~~, characterized in that the centre plane of the clip (11) is vertically symmetrical in relation to the longitudinal direction of the components (1, 2).

13. Components or arrangement according to Claim 1 ~~[one of Claims 1 to 12]~~, characterized in that in a clip base body (17), a multiple of flange elements (10, 19) and/or detents (12) are provided, lying side by side in a row.

14. Components or arrangement according to Claim 1 ~~[one of Claims 1 to 13]~~, characterized in that the detent (12) is concavely bent downward.

15. Components or arrangement according to Claim 1 ~~[one of Claims 1 to 14]~~, characterized in that at least one recess (28) is formed in the transitional or connection area (38) between the detent (12) and the clip base body (17).

16. Components or arrangement according to Claim 1 ~~[one of Claims 1 to 15]~~, characterized in that from at least one of the edges (7) of a component (1, 2), two legs extend, forming a groove (5) between them, and that into this groove (5) a tongue (6) coming from one of the edges of the other component (2) can be inserted, whereby, if need be, the leg (4) at underside level is shorter than the leg (3) at top surface level.

17. Components or arrangement according to Claim 1 ~~[one of Claims 1 to 16]~~, characterized in that the detent (12) extends diagonally upward from the clip base body (17) at an angle (β) of 10° to 30°, preferably 15° to 25°.

18. Components or arrangement according to Claim 1 ~~[one of Claims 1 to 17]~~, characterized in that the detent (12) curves and ends in the locking element (18).

19. Components or arrangement according to Claim 1 ~~[one of Claims 1 to 18]~~, characterized in that the two recesses (8', 9'), which run parallel to the transverse edges (7') of a component (1, 2), have an incline that is comparable to that of their edge-proximate inside surfaces (13, 21).

20. Clip for components or an arrangement according to Claim 1 ~~[one of Claims 1 to 19]~~, characterized in that the clip (11) is provided with at least two upward projecting retaining elements (10, 12), one of which is a flange element (10) bent upward from the clip base body (17), characterized in that the other retaining element (12) is formed by an elastically or resiliently displaceable detent (12) extending upward, whereby the detent (12), which may hold in its free end section an upward extending locking element (18), may in unstressed position extend from the clip base body (17) diagonally upward in the direction of the retaining element (10), and whereby between the upward-extending flange element (10) and the detent (12), the clip base body (17) holds an additional flange element (19) that is also extending upward.

22. Clip according to Claim 20 ~~[or 21]~~, characterized in that in the lateral end sections of the flange element (10) and/or the additional flange element (19), bent engagement elements, in particular hooked or pointed deflections (41) are formed.

23. Clip according to Claim 20 ~~[one of claims 20 to 22]~~, characterized in that it is has one or more of the characteristics of Claims 2, 4, 5, 7, 12 to 15, 17 or 18.

Components or arrangement with such components, and clip for same

Description

The invention relates to structural members or components or an arrangement with such components according to the preamble of Claim 1.

Such arrangements or components are known from German Utility Model DE 297 10 175 U1.

It is an object of the invention to allow the simple manufacture of such components and clips as well as to allow that with the clips, the components can be laid and joined together easily, quickly and with precision. A substantial object of the invention is to facilitate the glueless, quick and durable laying of a floor and its easy and non-destructive dismantling.

In accordance with the invention, these objects are achieved with an arrangement of the kind mentioned above, according to the characterizing clause of Claim 1. It is a particular advantage of the arrangement according to the invention when the clip, whose free end section may include a locking element, extends, in unstressed position, upward from the clip base, in the direction obliquely to the plane defined by the edges of the components, or, in a stressed position, the clip can be elastically deflected downward. The characteristics of the invention, the simple design of the clip and the easy manufacture of the components ensure that the clip can be applied quickly, that the components can be joined together simply and with precision, and that the bond is good and firm. If the components according to the invention are laid and glued as well, no clamping means are necessary, since the clips hold the components under tension until the glue or other adhesive is cured.

An advantageous connection between the clip and a component to which an adjacent component is to be joined, is produced when the method according to the features of Claim 4 is followed. A precise and firm bond is accomplished when the features of Claims 7 or 9 are applied.

A simple, strong clip, which holds the components well in their position, results when the method described in Claim 5 is followed.

Advantageous for laying the components with precision and for ensuring a firm fit of the clips are the characteristics of Claims 11 and/or 16.

The invention also relates to a clip for components or for an arrangement of the kind mentioned above, which is easy to manufacture and can join the components firmly together, in accordance with the preamble of Claim 20, and which, according to the invention, is defined by the characterizing clause of Claim 20.

Advantageous embodiments of the invention are explained in the following description, in the claims and in the drawings.

Examples of the invention are described in detail with reference to the drawings, where

Figs. 1 and 1a show the longitudinal joining of two components in a diagrammatic sectional view;

Fig. 1b shows the bottom view of a component;

Fig. 2 shows a top view of a clip;

Fig. 3 shows a diagrammatic side view of two components joined longitudinally according to another embodiment of the invention;

Fig. 4 shows how two components are joined, at their narrow ends;

Fig. 5 shows a diagrammatic view of a component, as seen from its longitudinal side;

Fig. 5a shows in schematic view how two components are joined by their end edges.

Fig. 1 shows a first embodiment of the invention, according to which two elongated components 1 and 2, which are rectangular when seen in a top view, such as floor panels, are joined together lengthwise, and are disposed on the floor or on a support not shown, and are aligned along a wall 42 as shown in Fig.

1a.

The left component 1, which is shown only partly in Fig. 1, is provided, on its right edge 7, with a projection in the form of a tongue 6 and, on the other edge, shown only in phantom lines and abutting against the wall 42, with a recess in the form of a groove 5; this component 1 is joined to component 2 which is provided on its edge 7 shown in the drawing with a recess in the form of a groove 5, bordered by two legs 3, 4, and on its opposite edge with a tongue 6 shown in broken lines. Instead of these projections and recesses, it is also possible to form stepped shoulders, keys, etc. or several parallel tongues and grooves. The underside 15 of each of the components 1, 2 is provided, at portions near each of its two longitudinal edges, and near each of the transverse end sections with a recess 8, 9 or 8', 9', which extends substantially parallel to the edge 7 and serves to accommodate retaining elements in the form of flange elements 10 and detents 12, as shown in Fig. 1b. The flange element 10 and the detent 12 are formed from a clip base body 17 of a clip 11, and they engage in recesses 8, 9 or 8', 9'. In Fig. 1, components 1, 2 are shown as seen in the direction as viewed in the direction away from their transverse, short end edges 7', and the cross section of the recesses 8, 9 extending parallel to the long edges of components 1, 2 can be seen.

Clip 11 is brought in position on or snapped onto component 1 by means of flange element 10, which is bent upward from the clip base17, and by means of another flange element 19, which can be applied to the longitudinal edge 7 of component 1 in an edge portion 22. The edge-proximate inside surface 13 of recess 8 and the edge portion 22 together with the flange elements 10 and 19 that can be applied to these surfaces are disposed at a corresponding slant in relation to the above, or the angle of incline of contact surfaces 13, 22 is adapted to this dovetailed section 42 of component 1, so that clip 11 can be snapped into this dovetailed part and held in position there.

In the sector referred to as 30 in Fig. 1, a resilient detent 12 extends in unstressed position from the clip base edge 17 upward in the direction oblique to the plane formed by the abutting edges 7 of components 1 and 2.

Advantageously, it can be provided in this case that detent 12 runs obliquely upward from clip base body 17 at an angle β between 10° and 30°, preferably between 15° and 25°.

The detent 12 is provided at its forward portion with a locking element 18, which is curved or bent upward and can be placed so that its whole surface or its end or an end rim can be applied to the edge-proximate inside surface 20 of recess 9, and so that in applied position it exerts a spring action upon the downward-pivoted component 2 via this inside surface 20 in the direction toward the component 1.

In Fig. 1 it is shown how the components 1, 2 are joined together. After the clip 11 was initially fastened to component 1, component 2 is placed from the top, or at an angle of about 60° to 80° from the top, by edge-proximate leg 3 of groove 5 onto the tongue 6 of component 1, and then, while component 2 is simultaneously pivoted downward, groove 5 is pushed onto tongue 6. During this pivoting movement, as shown by arrow 40, recess 9 is brought close to the upwardly projecting locking element 18, and locking element 18 enters recess 9, as shown by reference 31. When component 2 is lowered further, locking element 18 comes in contact with the inside surface 20 of recess 9 and pushes component 2 in the direction of the other component 1. At the same time, component 2 is also pushed in that direction by hand, so that groove 5 fully snaps onto tongue 6. Eventually, component 2 is pivoted onto the plane of component 1 and, as indicated in Fig. 4 by reference 32, the upper edge areas of components 1, 2 adjoin each other without gap and are under pressure from locking element 12. In section 33, the two opposite edge areas 22 have a space between them at bottom level, especially to make room for the additional flange element 19 of clip 11 or to allow the attachment or application of the element to one of the edge areas 22 at bottom level. This space is also used to compensate for uneven parts of the floor and to prevent surface 14 from cracking.

When the locking element 18 has entered recess 9, the rounded profile of the locking element 18 contacts edge 35 of recess 9. When component 2 is pivoted further, locking element 18 snaps into final position about this edge 35,

where surface 20 is pressed downward and in the direction of component 1 by locking element 18. Since the edge-proximate inside surface 20 is provided with an undercut or beveled configuration, the joint is prevented from becoming loose by itself.

Advantageously, detent 12, as shown by reference 36, is somewhat concavely curved downward, to facilitate the bending and snapping-back of the resilient detent 12.

In the embodiment shown in Fig. 1 and 4, the two recesses 8, 9 provided in each of the two components 1 and 2 are mirror-symmetrical. If edge area 22 of the two components 1 and 2 at bottom level, which are opposite each other, also have mirror-symmetrical abutting surfaces, it is possible to apply clip 11 either to the edge portion of component 1 which is provided with tongue 6, or to the side section of component 2 which is provided with groove 5. The preferred method is to apply clip 11 to the edge portion of a component 1, 2 provided with tongue 6, since it is easier to attach groove 5 to tongue 6 while pivoting component 2 than in reverse order.

The position of clip 11 also depends on the incline of edge area 22; clip 11 will fit more firmly to component 1 if edge area 22 has an appropriate incline.

Fig. 3 shows a schematic cross section of an embodiment or method of the invention, according to which a component 2 is joined to component 1 from the side by pushing it horizontally. In principle, this method can be used to join the longitudinal edges of components 1 and 2 according to Fig. 1, but advantageously it is used for joining the transverse narrow end edges 7' of the two components 1, 2. In this case, either the already laid component 1 can be slightly lifted with its attached clip 11, or else component 1 with clip 11 can be placed on a soft, resilient base such as a sound insulation underlay, to allow detent 12 to be moved or deflected downward. As soon as component 2 is moved toward component 1 in substantially horizontal direction as shown by arrow 34, the detent with locking element 18 is pushed below the plane of clip base body 17, and groove 5 can be pushed onto tongue 6. As soon as groove 5 has been pushed onto tongue 6, the edge-proximate inside surface 21 of recess

9, which slants diagonally toward the top right, comes to rest above locking element 18, then locking element 18 snaps into or enters recess 9, abuts resiliently against the inside surface 21 and thus prevents the unlocking of the tongue-and-groove joint of component 2 and component 1.

To allow the sliding of a component 2 as described in connection with Fig. 3 beyond the pushed-down detent 12, in particular without damaging locking element 18, the aforesaid locking element 18 is deflected at such a curve that it cannot hook onto component 2. Furthermore, detent 12 is carefully deburred to prevent it from becoming caught.

Fig. 2 shows a top view of a clip 11 according to the invention. Clip 11 has an approximately rectangular circumference, and advantageously it is produced by stamping out a thin, resilient material. The flange element 10 is bent upward from clip base body 17. It is advantageous when in the lateral end sections of flange element 10 and/or the other flange element 19, engagement elements 41, in particular hooked or pointed deflections, are provided. This prevents clip 11, which snaps into section 42, from sliding in lateral direction. Located opposite flange element 10 is the other flange element 19, which is also bent upward from clip base body 17. A stamped-out area 37 limits the other flange element 19 and detent 12. It is advantageous when at least one recess 28 is formed in the transitional or joint area 38 between the detent 12 and the clip base body 17. The spring force of detent 12 can be adjusted to the size, especially the width, of recess 28.

It is advantageous if the clip 11 is symmetrically designed so that its centre plane is perpendicular to the direction of the flange elements 10, 19. It can also be provided that in a clip base body 17, a multiple of flange elements 10, 19 and/or detents 12 are formed, lying side by side in a row. It is also possible to have a combination of several flange elements 10 or 19, which lie opposite each other, perhaps in staggered fashion, and one or more detents 12.

The spring action of detent 12 prevents components 1 and 2 from moving apart; however, due to the spring action, the components are allowed a certain degree of expansion, particularly in response to moisture.

Fig. 4 shows recesses 8, 9 of two components 1, 2 joined to each other along their longitudinal edges 7; the abutting planes of these recesses are mirror-symmetrical. It is evident that the edge-proximate inside surface 20 of recess 9, against which detent 12, (which extends diagonally upward) can abut, especially with its bent-away or curved locking element 18, encloses an angle (α) of less than 90° with surface 15 of component 1, preferably an angle between 60° and 80°, and that the edge-proximate inside surface 13 of recess 8, against which flange element 10 can abut, encloses the same angle (α') with surface 14. Insofar as edge area 22' has the same incline as edge area 22, either area 44 or 44wherein can be chosen for snapping a clip 11 into flange elements 10 and 19.

In Fig. 4 and 5, the horizontal lines 45 indicate the path of a groove or tongue on the narrow or transverse edges 7' or on the longitudinal edges 7 of components 1, 2. To keep the drawing simple, this indication of a groove or tongue in the respective edges of the components was omitted in Fig. 1 and 3. In practice, a groove is provided on the longitudinal and transverse edge of a component, while a tongue is provided on the other transverse edge, so that the components can be laid in such a way that they are joined either by their longitudinal edges or by their narrow edges; the clips according to the invention can be used to produce a joint on the longitudinal edges as well as on the short end edges.

As shown in Fig. 5a, it is advantageous to begin by laying a component 1 by one of its edges, preferably the grooved longitudinal edges 7, against a wall 42 of a room and, as shown in Fig. 1 and 5a, by connecting another component 2 to its tongued edge. When another row of components 1, 2 is laid beside it, also extending out from wall 42, it becomes necessary to join components 1, 2 of the new row to the components of the previously laid row along their narrow edges. This is accomplished by means of the recesses 8', 9' in components 1, 2 which extend along the end edges 7', as shown in Fig. 1b and 5, or by means of the method described in connection with Fig. 3. As soon as two components 1, 2 of a new row, as shown on the right in Fig. 5a, are joined either by pivoting in accordance with Fig. 1 or by pushing-in according to Fig. 3, the component of

the new row to be added can be pushed in the direction of the end edge of the corresponding already laid component. This component 2, which can be pushed as indicated by arrow 43, is already held on its longitudinal edge by clips 11 and can no longer be moved away from the already laid component 1. Before pushing in the direction of the narrow edge 7' of the already laid component 1, at least one clip 11 was fastened to narrow edge 7' of the laid component, and this clip is projecting from said narrow edge 7'; as indicated by arrow 43 in Fig. 5a, component 2, which is to be newly inserted, is pushed over detent 12 – or according to Fig. 3 over the upward-extending locking element 18 of detent 12 – and thus fixed.

It was found that it is advantageous when recesses 8, 9, which extend parallel to the longitudinal edges 7 of components 1, 2, are mirror-symmetrical and provided with undercut inside surfaces 13 and 20. On the other hand, it was found that it is advantageous when recesses 8' 9' which extend parallel to the end edges 7' of components 1, 2, are not mirror-symmetrical but have comparable inclined inside surfaces 13, 21. The inside surface 13 of recess 9' , for accommodating flange 10 of clip 11, is undercut, as shown in Fig. 5, while the inside surface 21 of the recesses which extend along the opposite transverse edge 7' is not undercut.

Recess 8' along transverse edge 7' has the same cross section as recess 9 in Fig. 3, where, however, it was described as a special case or special embodiment.

To allow locking element 18 to snap into recess 8', it is necessary that the inside surface 21 has at least a vertical position in relation to the underside 15 of component 1; however, it is advantageous, especially in view of the fact that the end of detent 12 describes a circular path when pivoted, and also to ensure that detent 12 abuts correspondingly to inside surface 21, that inside surface 21 describes a corresponding angle (α') in relation to detent 12 or its area 30. This angle also ensures that, should the components shrink or expand, the detent or its contact surface or edge sits firmly on the inside surface, or that this inside surface can slide up and down on this contact surface exerting a pressure.

It can be provided, for the formation of edge 35 or to facilitate the snapping-in of locking element 18 in an embodiment of clip 11 according to Fig. 1, that the edge-proximate area of recess 9, which accommodates detent 12, is beveled, reduced in size or rounded, as indicated by reference 23.

In Fig. 4, it is indicated that the edge-distant inside surface 29, remote from the end edge, of recess 9 for detent 12 is inclined at an angle γ between 15° and 40°, preferably between 20° and 35°, in relation to surface 14. In principle, the remote inside surface 29 may have various shapes; it must be formed in such a way that it does not counteract the entry of locking element 18 of detent 12 in recess 8 while component 2 is pivoted.

Advantageously, recesses 8, 9, 8', 9' or grooves 5 and tongues 6 are cut out, in particular milled out, from components 1, 2. Finishing coats for components 1, 2 on top surface 14, underside 15 and in some cases on edges 7 are not shown and can be chosen at random. Components 1, 2 could be made of any material that can be machined in such a way that recesses 8, 9, 8', 9' can be produced easily and with precision.

The clips 11 are punched-out parts which in particular can be manufactured in one production run. The clip base body 17 and/or the detent 12 can be reinforced by means of appropriate inserts or beading.

The angles at which the flange elements 10, 19, the detent 12, the inside surfaces 20, 21 or 13, and the edge area 22 are inclined in relation to surface 14 of components 1, 2, can be varied from section to section; these angles should mainly ensure the easy application or snapping of clips 11 to the appropriate components 1, 2, and ensure the trouble-free penetration of locking element 18 into recess 9 while providing a firm hold.

The number of clips 11 to be attached along one of the edges 7, 7' of components 1, 2 is optional. The clips are fastened at intervals of approximately one every 60 cm.

Claims

1. Components or arrangement with such components in the form of panels or planks, which may be coated on the top surface and/or underside with plastic laminates, etc., made of wood, wood products or wood-based products such as panels, sheets, floor panels, wooden siding and cladding, etc.,

- wherein the longitudinal edges (7) of the components (1, 2) are provided with matching projections and/or recesses, preferably tongues (5) and grooves (6), with which adjacent components (1, 2) can be joined,
- wherein in the underside (15) of each component (1, 2), parallel to the longitudinal edges and if need be also parallel to the transverse edges (7), two groove-shaped recesses (8, 9, 8', 9') are formed to accommodate the retaining elements (10, 12) of at least one clip (11) provided under the components (1, 2), with which clip the adjacent components (1, 2) are held together or pressed together by their edges (7);
- wherein the retaining elements (10, 12) extend or are bent upward from the clip base body (17);
- wherein one of the two retaining parts (10) can be applied to the inside surface (13) proximate to the end edge of a recess (8, 9') of one component (1) and the other retaining element (12) can be applied to the edge-proximate inside surface (20) of a recess (8', 9) of the adjacent, joined component (2); and
- wherein one of the retaining elements (10), preferably the retaining element (10) provided in recess (8) in the grooved edge, is a flange element extending or bent upward,

characterized in that

the other retaining element, which is adapted to engage in recess (8', 9) of the joined component (2), preferably in the recess (8', 9) near the tongued edge (7), is formed by a detent (12) whose free end section can, if need be, include an elastically or resiliently displaceable locking element (18), which in unstressed position extends diagonally upward from the clip base body (17) in the direction of

the plane defined by edges (7) of components (1, 2), and which cantilevers or extends upward.

2. Components or arrangement according to Claim 1, characterized in that the detent (12) in stressed condition or in locking position is or can be elastically turned, adjusted, pivoted or swivelled downward into or below the plane of the clip base (17).

3. Components or arrangement according to Claim 1 or 2, characterized in that the two recesses (8, 9) running parallel to the longitudinal edges (7) are mirror-symmetrical in relation to the longitudinal centre plane of the corresponding component (1, 2).

4. Components or arrangement according to one of Claims 1 to 3, characterized in that the clip base (17) carries between the upward extending flange element (10) and the detent (12) another flange element (19) extending upward, which can be applied against the edge (7) of the component (1) accommodating the upward extending flange element (10), wherein if need be, the two flange elements (10, 19) are inclined toward each other and with surface (14) enclose the same angle between 60° and 80°, wherein the edge area (22) of edge (7), against which the flange element (19) can be applied, is inclined toward the surface (14) of the component (1, 2) at the same angle as the flange element (19).

5. Components or arrangement according to one of Claims 1 to 4, characterized in that the detent (12), the flange element (10) and the additional flange element (19) are punched out of the clip base (17) which is made of spring-elastic metal.

6. Components or arrangement according to one of Claims 1 to 5, characterized in that the edge-proximate inside surfaces (13, 20) of the two longitudinal recesses (8, 9) and one of the two transverse recesses (9') against which the flange element (10) or the detent (12) can be applied, particularly with a

deflected or bent locking element (18), enclose an angle (α) smaller than 90°, preferably an angle between 50° and 80°, with the surface (14) of the component (1, 2), and that the edge-proximate inside surface (21) of the other transverse recess (8') against which the detent (12) can be applied, encloses an angle (α') larger than 90°, preferably an angle between 110° and 130°, with the surface (14) of the component (1, 2).

7. Components or arrangement according to one of Claims 1 to 6, characterized in that when the detent (12) is tilted into the plane of the clip base body (17), the locking element (18) of the detent (12), with the surface (14) of the component (1, 2), encloses an angle which corresponds to the angle enclosed by the edge-proximate inside surface (13, 20) with the surface (14) of the component (1, 2).

8. Components or arrangement according to one of Claims 1 to 7, characterized in that the edge-proximate edge area (23) of the recess (9) accommodating the detent (12) is bevelled, reduced in size or rounded.

9. Components or arrangement according to one of Claims 1 to 8, characterized in that the edge-proximate inside surface (21) of one of the transverse recesses (8') can be applied against the detent (12) or its locking element (18), and that the locking element (18) of this detent (12) is inclined in the direction opposite to that of the surface (14) of the components (1, 2), that they each enclose different angles, whereby the outside end edge (25) of the inside surface (24) of recess (8') is closer to the transverse edge (7') of the corresponding component (1, 2) than the inside end edge (26).

10. Components or arrangement according to one of Claims 1 to 9, characterized in that the edge-proximate inside surface (29) of the recesses (8, 8', 9, 9') is rounded or runs at an angle (γ) of incline between 15° and 40°, preferably between 20° and 35°, in relation to the surface (14).

11. Components or arrangement according to one of Claims 1 to 10, characterized in that the edges (7) of the components (1, 2), which may have a plane underside (15) for lying on a plane underlay, adjoin each other at surface level but have a space between each other at bottom level (33).

12. Components or arrangement according to one of Claims 1 to 11, characterized in that the centre plane of the clip (11) is vertically symmetrical in relation to the longitudinal direction of the components (1, 2).

13. Components or arrangement according to one of Claims 1 to 12, characterized in that in a clip base body (17), a multiple of flange elements (10, 19) and/or detents (12) are provided, lying side by side in a row.

14. Components or arrangement according to one of Claims 1 to 13, characterized in that the detent (12) is concavely bent downward.

15. Components or arrangement according to one of Claims 1 to 14, characterized in that at least one recess (28) is formed in the transitional or connection area (38) between the detent (12) and the clip base body (17).

16. Components or arrangement according to one of Claims 1 to 15, characterized in that from at least one of the edges (7) of a component (1, 2), two legs extend, forming a groove (5) between them, and that into this groove (5) a tongue (6) coming from one of the edges of the other component (2) can be inserted, whereby, if need be, the leg (4) at underside level is shorter than the leg (3) at top surface level.

17. Components or arrangement according to one of Claims 1 to 16, characterized in that the detent (12) extends diagonally upward from the clip base body (17) at an angle (β) of 10° to 30°, preferably 15° to 25°.

18. Components or arrangement according to one of Claims 1 to 17, characterized in that the detent (12) curves and ends in the locking element (18).

19. Components or arrangement according to one of Claims 1 to 18, characterized in that the two recesses (8', 9'), which run parallel to the transverse edges (7') of a component (1, 2), have an incline that is comparable to that of their edge-proximate inside surfaces (13, 21).

20. Clip for components or an arrangement according to one of Claims 1 to 19, characterized in that the clip (11) is provided with at least two upward projecting retaining elements (10, 12), one of which is a flange element (10) bent upward from the clip base body (17), characterized in that the other retaining element (12) is formed by an elastically or resiliently displaceable detent (12) extending upward, whereby the detent (12), which may hold in its free end section an upward extending locking element (18), may in unstressed position extend from the clip base body (17) diagonally upward in the direction of the retaining element (10), and whereby between the upward-extending flange element (10) and the detent (12), the clip base body (17) holds an additional flange element (19) that is also extending upward.

21. Clip according to Claim 20, characterized in that in stressed position, the detent (12) can be moved elastically from its stationary position downward in the direction of the clip base body (17), or that it can be deflected or adjusted through the said clip base body.

22. Clip according to Claim 20 or 21, characterized in that in the lateral end sections of the flange element (10) and/or the additional flange element (19), bent engagement elements, in particular hooked or pointed deflections (41) are formed.

23. Clip according to one of claims 20 to 22, characterized in that it is has one or more of the characteristics of Claims 2, 4, 5, 7, 12 to 15, 17 or 18.

Abstract

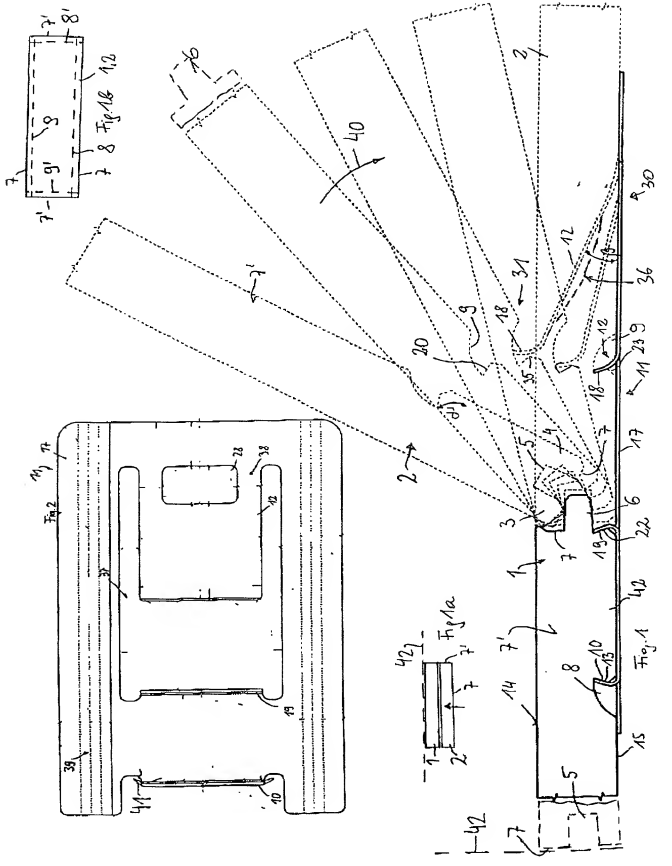
The invention relates to wood-product components (1, 2) which are provided, along their longitudinal edges (7) with matching projections and/or recesses by which they are joined together,

wherein two recesses in the form of grooves are provided in the underside (15) of each component (1, 2), for accommodating retaining elements (10. 12) of at least one clip (11) arranged under the components (1, 2);

- wherein the retaining elements (10, 12) extend upward from the clip base body (17);
- wherein one of the two retaining elements (10) can be engaged with an edge- proximate inside surface (13) of a recess (8, 9') of one component (1), and the other retaining element (12) can be engaged with an edge-proximate inside surface (20) of a recess (8', 9) of the adjoining component (2), and
- wherein one of the retaining elements (10) is a flange element extending upward.

According to the invention, the components are characterized in that the other retaining element, adapted to engage in the recess (8', 9) of the adjoining component (2), is formed by a resilient detent (12) which in unstressed position extends upward from the clip base (17) in the direction obliquely to the plane defined by the edges (7) of components (1, 2).

(Fig. 1)



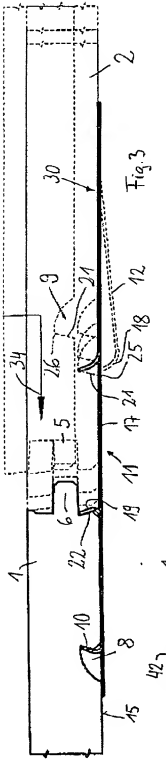


Fig. 3

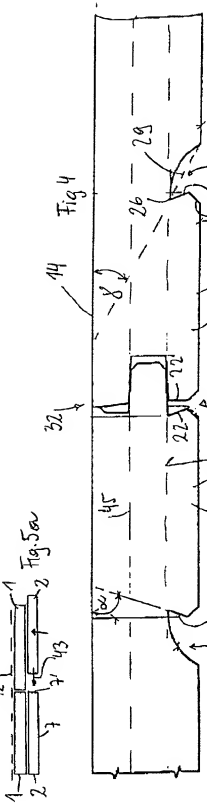


Fig. 4

Fig. 5

Fig. 5a

Attorney Docket No. PATNP0101US

PATENT (OUS)

COMBINED DECLARATION AND POWER OF ATTORNEY
(ORIGINAL, DESIGN, NATIONAL STAGE OF PCT)

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name; and I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Title: COMPONENT OR ASSEMBLY OF SAME AND FIXING CLIP THEREFOR

the specification of which

[ ] is attached hereto, or

[X] was filed as United States Application or PCT International Application *(give Express Mail label number and deposit date if Application number not yet known)*:

Application No.: PCT/AT00/00145 ✓
(Express Mail Label No.)
Filing Date: May 24, 2000 ✓
(Deposit Date)
Amended on *(if applicable)*:

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations §1.56(a).

PRIORITY CLAIM

I hereby claim priority benefits under Title 35, United States Code, §119 of (i) any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed; and (ii) any United States provisional application(s) that is/are listed below.

[ ] no such applications have been filed.
[X] such applications have been filed as follows.

EARLIEST FOREIGN/PROVISIONAL APPLICATION(S), IF ANY FILED WITHIN 12 MONTHS (6 MONTHS FOR DESIGN) PRIOR TO THIS U.S. APPLICATION

COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED	
			Yes	No
AT ✓	1278/99 ✓	23 July 1999 ✓	X	

ALL FOREIGN APPLICATION(S), IF ANY FILED MORE THAN 12 MONTHS (6 MONTHS FOR DESIGN) PRIOR TO THIS U.S. APPLICATION

RENNER, OTTO, BOISSELLE & SKLAR

POWER OF ATTORNEY

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (List name and registration number)

Armand P. Boisselle, Reg. No. 22,381; Warren A. Sklar, Reg. No. 26,373; Don W. Bulson, Reg. No. 28,192

The undersigned to this declaration and power of attorney hereby authorizes the U.S. attorney(s) named herein to accept and follow instructions from

Authorized representative: PATENTANWÄLTE, Dipl.Ing. Dr. Helmut Wildhack, Dipl.Ing. Dr. Gerhard Jellinek
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as to any actions to be taken in the Patent and Trademark Office regarding this application without direct communication between the U.S. attorney(s) and the undersigned. In the event of a change in the person(s) from whom instructions may be taken, the U.S. attorney(s) will be so notified by the undersigned.

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Inventor's signature:		Date:	
Residence: (City & State/Country):		Citizenship:	
Post Office Address:			

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[ ] Signature for additional joint inventors.
[ ] Added page to combined declaration and power of attorney for divisional, continuation, or continuation-in-part (CIP) application.
[x] This declaration ends with this page.